JS 6/2/21
RJA 2/18/22

INITIAL REVIEW ENGINEERING REPORT [redacted]
PMN: 19-0025

Focus Ready Draft 12/27/2018
ENGINEER: Hollinshead \ DDH
PV (kg/yr): [redacted] YX

SUBMITTER: Bercen, Inc.

USE: Intended Use: [redacted]

Analogues (same use): None.
Patents (same use): None.

OTHER USES: Analogues (other use): [redacted]

Analogues (same use and other use): None.
Patents (other use): [redacted]

MSDS: No

Label: No

TLV/PEL:
None provided.

CRSS (11/29/2018):

Chemical Name: 11-Docosene
S-H20: 1E-06 g/L @
VP: 1.5E-4 torr @
MW: 308.60 0.00%<500 0.00%<1000
Physical State and Misc CRSS Info:

Neat: Liquid Mfg: Liquid Proc/Form: NA End Use: Destroyed. Submitted Properties: MP < 20 °C (Exp.); BP = 350 °C (Sub. Est.); VP = 0.01 torr (Sub. Est.); WS < 0.00002 g/L (Sub. Est.); Flash Point = 185 °C (Sub. Est.); Density = 0.79 g/cc.
Estimated Properties: BP = 361 °C (EPI), 385 °C (ACD); VP = 0.00015 torr (EPI), 8.9E-6 torr (ACD); WS = 1.90E-9 g/L (EPI), 2.8E-7 g/L (ACD); logP = 10.93 (EPI), 11.51 (ACD).

Consumer Use: No

SAT (concerns) (11/30/2018):

Related Cases and Misc SAT Info:
Same as [redacted]
Analogues: [redacted]

Migration to groundwater: Negligible

PBT rating: P2B1T1
Health: 1-2 Dermal, Drinking Water, Inhalation, Other, XB Testing (Testing desired)

Eco: 1 No releases to water, XB Testing

OCCUPATIONAL EXPOSURE RATING: [redacted]

NOTES & KEY ASSUMPTIONS:
Occupational exposure and environmental releases were estimated using the 9/30/2013 version of ChemSTEER tool. Input to ChemSTEER tool includes information from: the PMN submission, physical / chemical properties, information from the technical contact, and relevant past cases. SAT report lists concerns for dermal, inhalation, and drinking water. Note: this is an exposure-based review for both health and eco; not exposure-based criteria were met. PMN is not volatile (VP < 0.001 torr). // Tehnical contact was called; see contact report. [redacted] No same submitter past cases found. No past cases with the same use [redacted] were found. Referenced three different submitter, similar use past cases ([redacted]) for consistency: [redacted] /// MFG: This IRER assesses releases from equipment cleaning to uncertain media (not consistent with [redacted]). It also assesses dermal exposures from Loading product using the 2-hand dermal model (consistent with [redacted]). /// USE: Releases were assessed during equipment cleaning only as storage tank cleaning assessed during mfg (generally consistent with past cases). Dermal exposures were assessed during unloading (consistent with [redacted]).

POLLUTION PREVENTION CONSIDERATIONS:
P2 Claim:
For the [redacted] produced from this olefin intermediate:
Reduced usage - lab results show 25-75% more efficient than existing [redacted] technology.
Ability to work in beverage containers allows shipping 100% active material to the plant versus incumbent products at 12-20% active in water. This lowers transportation volumes.

EXPOSURE-BASED REVIEW: [redacted]
1) # of workers exposed: [redacted] >1000? [redacted]
2) >100 workers with >10 mg/day inhalation exposure: [redacted]
3) (a) >100 workers w/1-10 mg/day inh. exp. & >100 days/yr: [redacted]
   (b) Routine Dermal Cont: >250 workers & >100 days/yr: [redacted]

INITIAL REVIEW ENGINEERING REPORT [redacted]

PMN: 19-0025

Manufacturing

Number of Sites/ Location: 1

Bercen Inc. Southern Div Denham Springs LA 70726-7739

unknown toll manufacturing site

Days/yr: 100

Basis: Submission states [redacted] RAD assumes [redacted] CS calculates [redacted]

Process Description: Unload C12 olefin from tanker truck or rail -> add to tank with catalyst and agitation -> PMN product formed (100% liquid) -> piped to storage tank or packaged into trucks from toll site to send to submitter site (submission and technical contact)

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium. Technical contact states that if toll manufacturing site is used, the batch sizes and release information would be the same as the submitter site.

Water
Output 2: 3.3E+3 kg/site-day over 100 days/yr from 1 site
or 3.3E+5 kg/site-yr from 1 site or 3.3E+5 kg/yr-all sites
to: Wastewater treatment, per submisison
from: Process Liquid Wastes
basis: User-Defined Loss Rate Model. Submisison estimates 3,308 kg/bt sent to on-site wastewater treatment then to Gulf Coast Waste (no NPDES number provided). Based on conversation with the technical contact, RAD assumes toll manufacturing site also utilizes wastewater treatment system.

Water or Incineration or Landfill
Conservative: 4.0E+2 kg/site-day over 1 day/yr from 1 site
or 4.0E+2 kg/site-yr from 1 site or 4.0E+2 kg/yr-all sites
to: Uncertain
from: Equipment Cleaning Losses of Liquids from Multiple Vessels
basis: EPA/OPPT Multiple Process Vessel Residual Model, CEB standard 2% residual. Submission does not provide information on equipment cleaning. Technical contact states that equipment is dedicated and equipment would only be cleaned as needed (the frequency would not be daily or monthly). Therefore, RAD assumes equipment is cleaned once/year and uses the multiple vessel residual model to capture both the reaction tank and the holding/storage tank. Technical contact also stated that submitter would wash equipment with water and send wastewater to on-site wastewater treatment (Gulf Coast Waste - no NPDES number provided). Based on potential for toll manufacturer as well, RAD assumes release is to uncertain media (water, incineration or landfill).

Incineration
Output 2: 1.8E+3 kg/site-day over 100 days/yr from 1 site
or 1.8E+5 kg/site-yr from 1 site or 1.8E+5 kg/yr-all sites
to: On-site Incineration, per submission
from: Process Vent to Flare
basis: User-Defined Loss Rate Model. Submisison estimates 1,818 kg/bt sent to on-site flare. Based on conversation with the technical contact, RAD assumes toll manufacturing site also utilizes a flare.

RELEASE TOTAL
5.1E+5 kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: 7
Basis:

Inhalation:

negligible (VP < 0.001 torr) and not used in any way that would generate a mist.

Dermal:

Exposure to Liquid at 100.00% concentration
High End:
> Potential Dose Rate: 2.2E+3 mg/day over 100 days/yr
> Lifetime Average Daily Dose: 3.9E+0 mg/day over 100 days/yr
> Average Daily Dose: 7.7E+0 mg/day over 100 days/yr
> Acute Potential Dose: 2.8E+1 mg/day over 100 days/yr
Number of workers (all sites) with dermal exposure: 7
Basis: Loading Liquid Product into Tank Trucks; EPA/OPPT 2-Hand Dermal Contact with Liquids Model. Per November 2016 RAD guidance, default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years.

INITIAL REVIEW ENGINEERING REPORT [redacted]

PMN: 19-0025

Use: [redacted]

Number of Sites/ Location: 1

Bercen Inc. Southern Div Denham Springs LA 70726-7739

Days/yr: 250

Basis:

Process Description: Unload PMN from storage tank -> mix with other raw materials -> [redacted] formed (PMN reacted and destroyed, per technical contact and CRSS)

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

Water or Incineration or Landfill
Output 1: 8.0E-1 kg/site-day over 250 days/yr from 1 site
or 2.0E+2 kg/site-yr from 1 site or 2.0E+2 kg/yr-all sites
Output 2: 4.0E+0 kg/site-day over 250 days/yr from 1 site
or 1.0E+3 kg/site-yr from 1 site or 1.0E+3 kg/yr-all sites
to: Uncertain

from: Equipment Cleaning
basis: Per March 2015 guidance on assessing releases of [redacted] from reactor cleaning and spills/leaks (per submission), RAD assumes 95-99% reaction, with 1% residual. Therefore, LF = (1-0.95 to 0.99) x 0.01 = 0.0001 to 0.0005. Media of release is unknown. Based on PMN manufacturing information from technical contact, most likely media of release is on-site wastewater treatment.

RELEASE TOTAL
1.0E+3 kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: 7
Basis:

Inhalation:

negligible (VP < 0.001 torr) and not used in any way that would generate a mist.

Dermal:

Exposure to Liquid at 100.00% concentration
High End:
> Potential Dose Rate: 2.2E+3 mg/day over 250 days/yr
> Lifetime Average Daily Dose: 9.9E+0 mg/day over 250 days/yr
> Average Daily Dose: 1.9E+1 mg/day over 250 days/yr
> Acute Potential Dose: 2.8E+1 mg/day over 250 days/yr
Number of workers (all sites) with dermal exposure: 7
Basis: Unloading Liquid Product from Containers; EPA/OPPT 2-Hand Dermal Contact with Liquids Model. Per November 2016 RAD guidance, default parameters for this model were updated: body weight (BW) was updated from 70 to 80 kg and Averaging Time over a Lifetime (ATc) was updated from 70 to 78 years.

[redacted]